

A.4.14 AOC 14

Description

AOC 14 is located in the East Yard adjacent to the south end of the EYB. This area was included as an AOC because it is an area where petroleum stained fill material was identified in six Pre-RFI soil borings conducted in 1991 by DRAI. The six soil borings (B-9, B-10, B-12, B-17, B-18 and B-19) contained TPH at concentrations ranging between 35 to 38,000 mg/kg. Several other COCs, including benzene and benzo(a)pyrene, were detected in some of the 1991 samples as well. As shown on Figure A.4.11 and summarized on Table A.4.11, many soil and groundwater samples have been collected in this area, and an LNAPL plume (Investigation Area EY4b), has been identified in this portion of the East Yard. Borings B-12, B-18, and B-19 are all located within the footprint of the EY4b LNAPL area, and Borings B-9, B-10 and B-17 are located immediately north of the LNAPL Area EY4b footprint. As discussed in more detail in Section 7 of the RFI Report, this area has been more extensively characterized as part of the LNAPL area delineation for Investigation Area EY4b.

As shown on Figure A.4.11, and summarized on Table A.4.11 data from 11 borings, 16 soil samples, and one monitoring well sample have been used to characterize this AOC. In addition, relevant data from SWMU 26 and the AOC 16 EY4b LNAPL area are also shown on Table A.4.11 for delineation purposes. Ten borings were installed during the 1st-Phase RFI, and 13 soil samples were submitted to the laboratory for Skinner's List VOCs, SVOCs and metals analyses and TPH GC fingerprint analysis. During the Full RFI, three soil samples were collected from one boring (S1424/MW-175) and analyzed for TCL VOCs and SVOCs, and TAL metals.

Soil

As noted above, AOC 14 is located within or in close proximity to LNAPL Area EY4b, and the source of petroleum impacts that were initially observed at AOC 14 is believed to be result of the EY4b LNAPL area.

The following table summarizes the number of samples where the delineation criteria were exceeded:

Constituents of Concern	Surface Soils (0 to 2 ft)	Fill Material (>2 ft)	Native Soils	Total
Benzene	0/2	4/14	0/0	4/16
Other VOCs	0/2	4/14	0/0	4/16
Benzo(a)pyrene	0/2	1/14	0/0	1/16
Other SVOCs	0/2	1/14	0/0	1/16
Lead	0/2	1/14	0/0	1/16
Other TAL Metals ^a	1/2	3/14	0/0	4/16

^aTotals do not include naturally-occurring metal compounds in excess of the delineation criteria (Al, Ca, Fe, Mg, Mn, K and Na).

Surface soils (0 to 2 feet bgs)

Limited petroleum-related impacts were observed in surface soils in and around AOC 14. Arsenic (22.3 mg/kg) was the only COC to exceed the applicable soil delineation criterion (20 mg/kg). This relatively low concentration of arsenic (22.3 mg/kg) is well within the normal range for soils, particularly glauconitic soils in the Coastal Plain (Saunders, 2003).

Fill Materials (>2 feet bgs)

Staining, odor and other evidence of petroleum-related impacts were observed in the subsurface fill material which ranges in thickness from approximately six feet to at least 32.5 feet (at S1424/MW-175) downgradient of AOC 14. As shown on the above table, four of the subsurface fill samples contained benzene above the applicable soil delineation criterion, and one sample (SB0009SC) contained benzo(a)pyrene (0.91J mg/kg) and dibenz(a,h)anthracene (0.73J mg/kg) slightly above the applicable soil delineation criteria. These samples are all located immediately downgradient of the EY4b LNAPL area, and it is likely that the observed impacts are directly related to the EY4b LNAPL area.

Lead (901 mg/kg) was detected above the soil delineation criterion in one soil sample (SB0009SC), and arsenic was detected slightly above the soil delineation criterion in three subsurface fill samples at concentrations ranging from 32.1 mg/kg to 83.2 mg/kg, which is well within the normal range for soils, particularly glauconitic soils in the Coastal Plain (Saunders, 2003).

Native Material

A clay/peat layer underlies the fill material in this part of the Refinery. In general, the peat layer is approximately 10 to more than 30 feet bgs. Only minor indications of petroleum impacts (e.g., petroleum odors) have been noted in the native material in this portion of the Refinery.

Groundwater

As summarized on Table A.4.11, several wells, including MW-144, MW-171, MW-175 and SB-16 and located near and/or downgradient of AOC 14. MW-144, which is located near the edge of the EY4b LNAPL area, contained arsenic (82 µg/L) and thallium (67 µg/L) above the applicable groundwater delineation criteria, and the groundwater sample from MW-149, which is also located near the edge of the EY4b LNAPL area, contained benzene (9 µg/L) and arsenic (41.1 µg/L). There were no exceedances of the groundwater criteria in the groundwater samples collected from MW-175, MW-171, or SB-16. A more detailed discussion of potential groundwater impacts for the EY4b LNAPL area can be found in Sections 7 and 8 of the RFI report.

Surface Water/Sediment

As part of the Full RFI, one surface water sample and one sediment sample were collected from the Arthur Kill, adjacent to AOC 14 (Transect 18). As summarized on Table A.4.11, and further discussed in Section 9, although PAHs and metals were detected in excess of the applicable sediment screening criteria in the sediment sample from Transect 18, it does not appear that Arthur Kill has been impacted by AOC 14, because the COCs detected in these samples were also detected in the upgradient sample from the Arthur Kill.

Summary

Based on visual and analytical information, soil impacts are restricted to the fill material. The six borings that were initially used to identify AOC 14 are all located within or adjacent to the EY4b LNAPL area, which has been fully delineated and characterized as discussed in detail in Section 7. Chevron recommends that AOC 14 be fully incorporated into the EY4b LNAPL area, which will be included for further evaluation in the CMS, and that this AOC be removed from the list of AOCs. Potentially impacted groundwater in this area will be evaluated further as part of the site-wide groundwater portion of the CMS.